

Implementing the

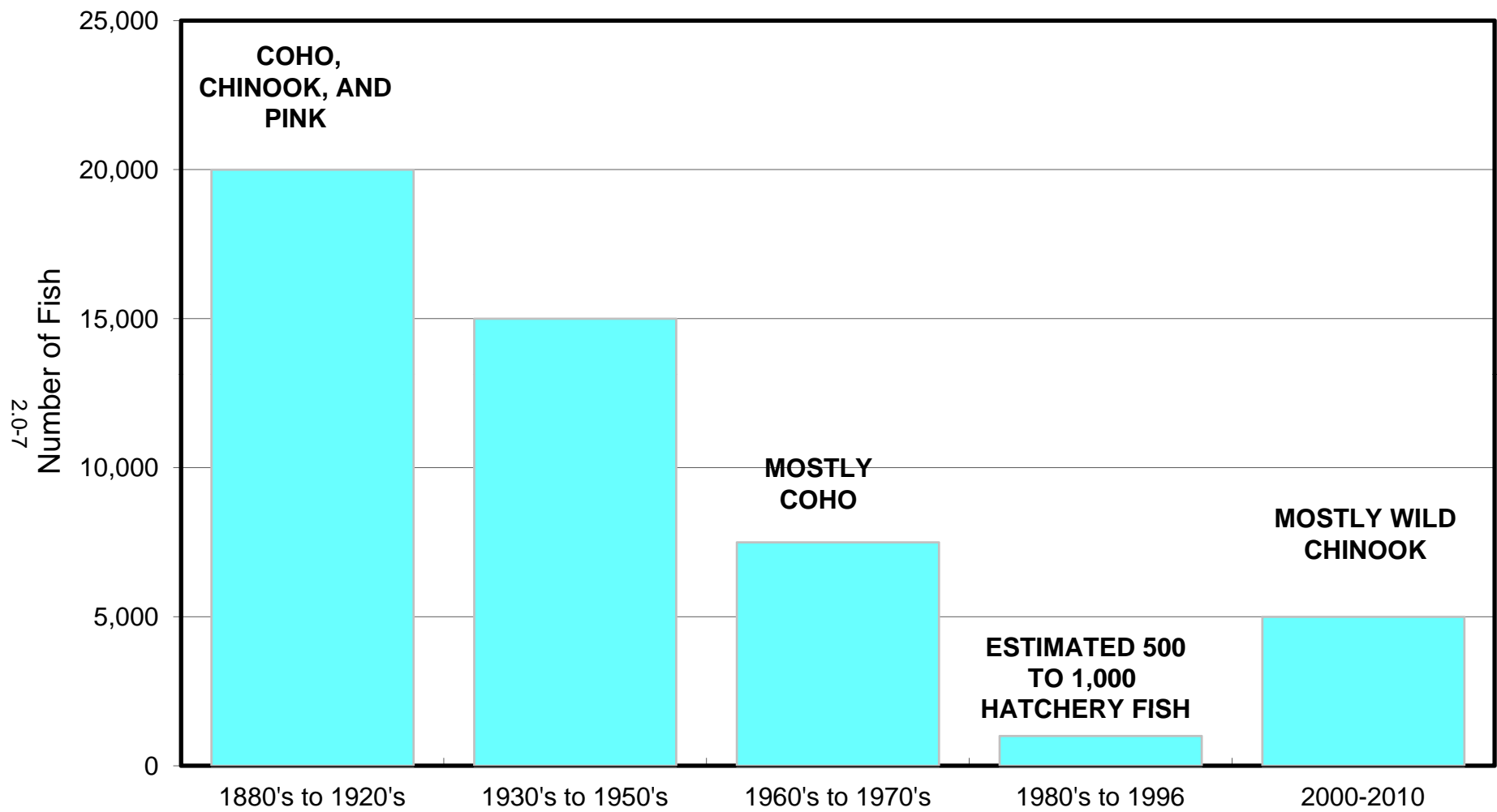
Biological Opinion for
Russian River Water Supply, Flood Control
Operations & Channel Maintenance

Progress 2011

National Marine Fisheries Service
February 9, 2012

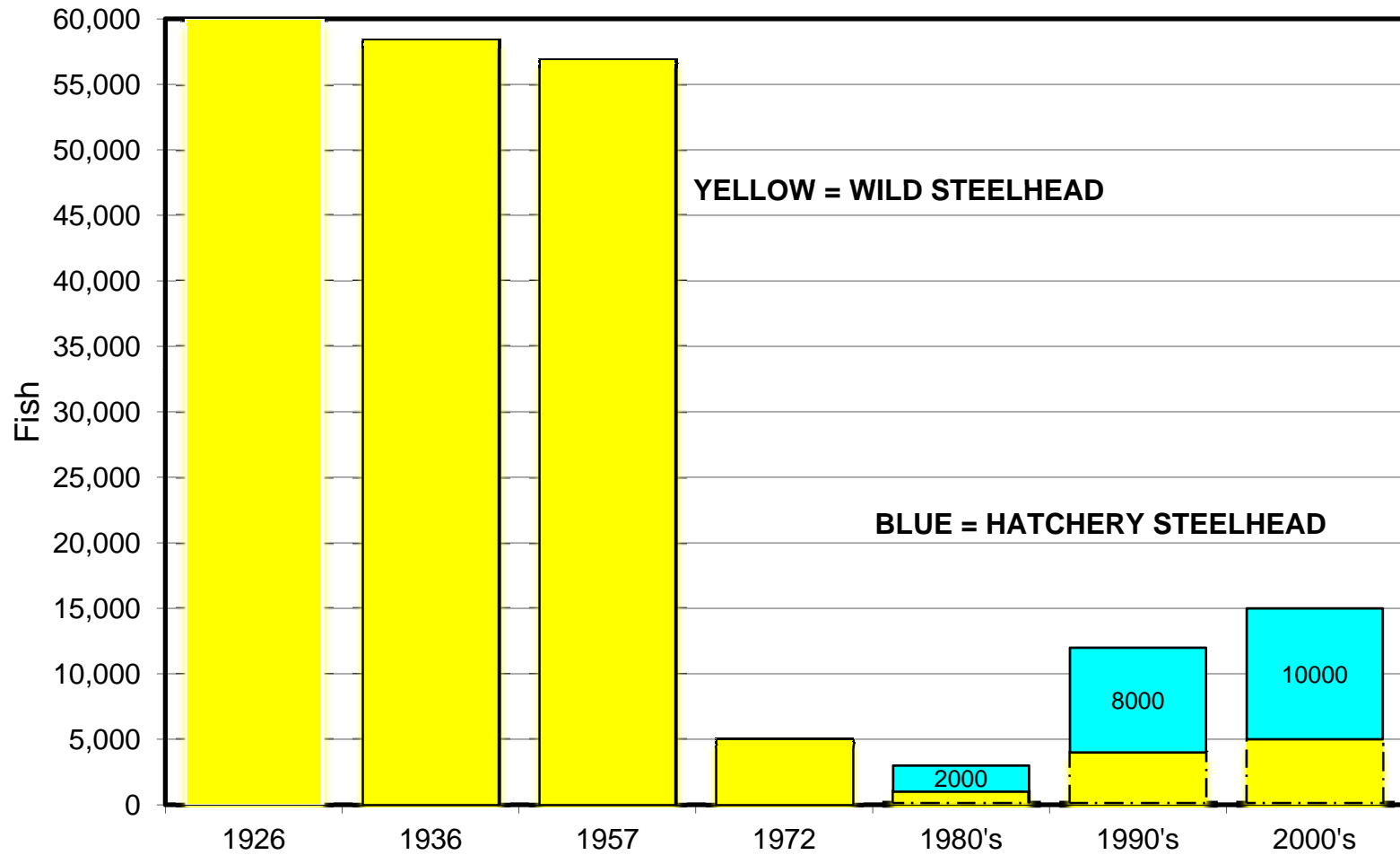
Purpose: minimize impacts of SCWA, MCRRFCD and ACOE related activities associated with water supply and flood control on Russian River and Dry Creek

- **Operations at Warm Springs Dam (WSD) and Coyote Valley Dam (CVD)**
 - **Flood Control Operations & water supply releases from dams**
- **Water level management of estuary at Jenner**
- **Modifications to D1610 Russian River flows**
- **Fish Hatchery Operations at WSD & CVD**
- **Water Diversion operations by SCWA at Wohler-Mirabel**
- **Ongoing Channel Maintenance by SCWA and MCRRFCD**



Estimated salmon returns to the Russian River over the past 130 years

STEELHEAD COUNTS, ESTIMATED RETURNS TO THE RUSSIAN RIVER



Major findings of Biological Opinion include:

- Summer rearing habitat for juvenile coho salmon and steelhead limited in Russian River watershed.
 - Especially for coho
- Dry Creek has superabundant very cold water, but summer flows are high with excessive velocities
- Estuary summer rearing habitat very important; however, high inflows and SCWA breaching activities impact estuarine habitat
 - Russian summer flows about 7 x natural summer flow

Alternative for Dry Creek high flows: Restore tributary habitats and modify Dry Creek mainstem habitats to accommodate high flows

Tributary restorations:

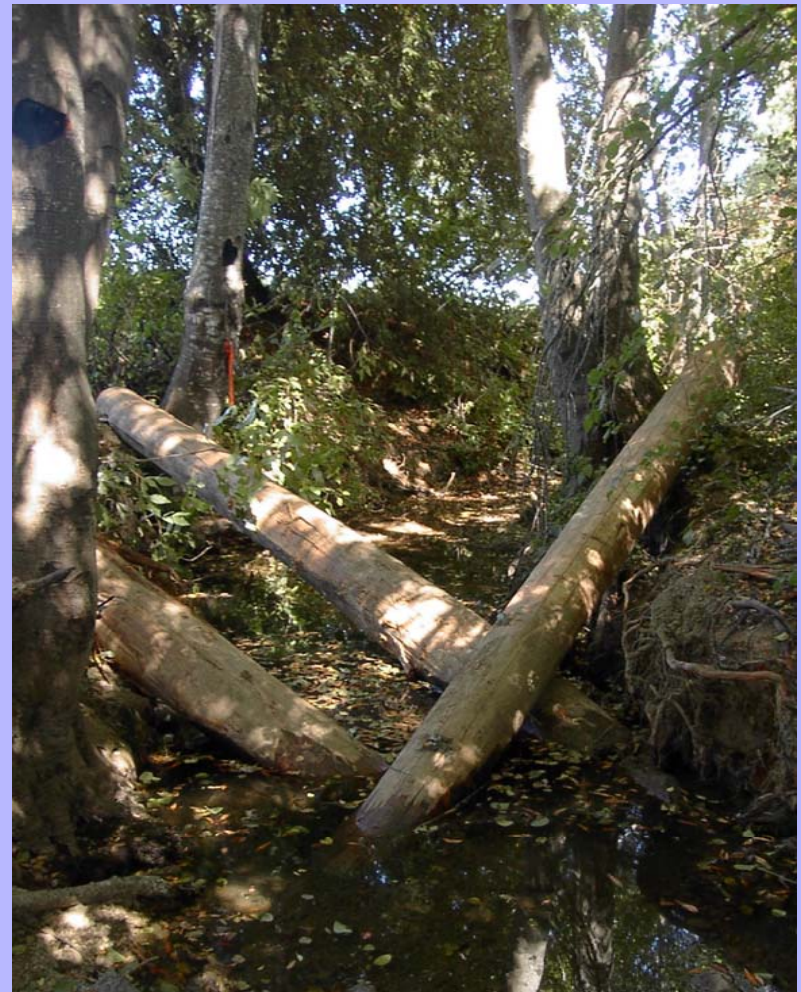
5 tributary projects needed.

Grape Creek habitat restoration:
completed ✓

Willow Creek restoration funding:
completed ✓

Crane Creek restoration: completed ✓

Grape Creek & Wallace Creek
highway passage design done:
Work to be completed 2012



Dry Creek mainstem

- Dry Creek enhancements to be started by Year 5 (2013)
- Landowner & SCWA support for 1st mile of habitat enhancement work
- 90% engineering design- Agency approved.
- On the ground implementation 2012. Year ahead of schedule.
- Corps also beginning small pilot project.
- Effort on track, although full funding of Corps' portion of Dry Creek still sought and Congressional authorization pursued.



**Objective: Restore an Estuarine Lagoon
from late spring through Summer**

(i.e., allow a barrier beach to remain across the river mouth all summer)

Why: -- River estuaries in Central California form natural lagoons in summer (Navarro, Scott Creek, Gualala, Mattole)

- A closed lagoon is better rearing habitat: less salt, deeper, wider.**
- The Russian River estuary historically formed lagoons (Ft Ross Settlement records and (Holway 1913).**
- A disproportionately large number of adult steelhead returning from the ocean are reared in freshwater lagoons. e.g., Scott Creek 85% of adults returning were lagoon reared.**

Since major dam construction, Lagoon doesn't form because:

- 1) Artificial summer inflows are too high
- 2) SCWA breaching practices

Lagoon becomes tidal, highly saline & shallow.

Saltwater stays on bottom & becomes anoxic.

Lagoon formation dependent on Natural Beach Formation

Two types of lagoons:

1. Totally closed= all outflow through beach
 - 2009: 31 day total closure, inflows 70-90 cfs
2. Perched=outflow through beach and surface flow

High surface flows can erode beach = failure.

Sometimes perched lagoons form despite high flows
(observed Fall 2011)



Lagoon Restoration

Two Prong Approach

1) Adaptively manage the beach to promote sustained perched lagoon

- When beach naturally forms, create long outlet channel over beach
 - Natural beach formation did not occur during June-August
- Jetty modification/removal may help
- Chances for success improve with lower inflows

2) Reduce inflows by reducing reservoir releases

- 2011 inflows to lower river were too high
 - Very wet spring- high tributary flow
 - Need reduced reservoir flow coming into Guerneville (*e.g.*, 85-90 cfs)

Fisheries and other monitoring in 2011

- SCWA implementing fisheries, water quality, macroinvertebrate, and pinniped monitoring in estuary
- SCWA implementing ongoing fisheries monitoring at Mirabel Wohler
- SCWA monitoring fisheries in Dry Creek

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Improve hatchery management & field monitoring of stocked juvenile coho salmon

Objectives: improved genetics management and field monitoring

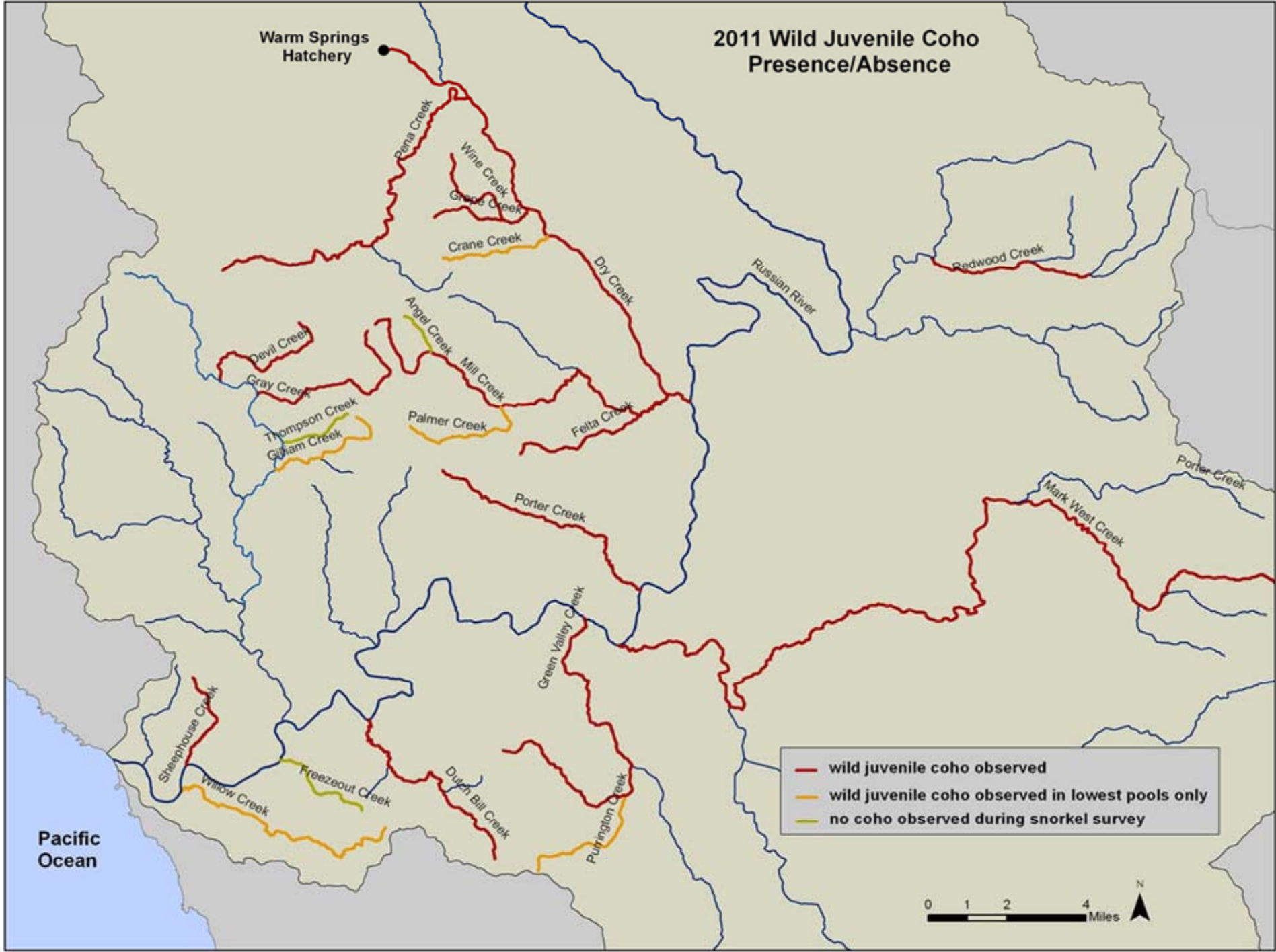
- 2011 & 2012 funding for analysis & management of genetics for coho broodstock program.
- rearing facilities for coho are upgraded at WSD.
- 2011 & 2012 funding for field monitoring of coho broodstock program.

Additional Ongoing efforts

- Turbidity monitoring and study of CVD
 - Corps purchased turbidity meters— two installed, two more need installation
- Flow Ramping study at CVD
 - NMFS and ACOE collaborating on joint study this winter
- Upgrade of Water diversion screen at Mirabel
 - SCWA implementation ongoing with good progress

Number of adult Chinook salmon at Mirabel Russian River





RRCSCBP Coho Production 2004-2011

Juvenile releases and minimum adult returns aligned by cohort.

